

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP2004/001094

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 F16L1/12 E02D9/04 E21B29/12

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 F16L E02D E21B B23D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 044 827 A (GRAY DAVID A ET AL) 3 September 1991 (1991-09-03) column 1, line 7 - line 12	2
A		1
Y	column 2, line 9 - line 27 column 9, line 45 - line 60 column 3, line 1 - line 5 column 3, line 56 - column 6, line 56 column 7, line 60 - line 67 claims 1,3,7,10 figures 1-3,7-15 --- -/--	3-6, 14-19



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
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Date of the actual completion of the international search

24 May 2004

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04/06/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Jankowska, M

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 437 517 A (CARRIOLI PAOLO ET AL) 1 August 1995 (1995-08-01) column 8, line 16 -column 9, line 4 claims 1,2 figures 1-10	2
A	-----	1,7
Y	GB 2 286 648 A (STENA OFFSHORE LTD) 23 August 1995 (1995-08-23) figures	3-6, 14-16,19
Y	----- WO 02/075059 A (MATTEUCCI FRANCESCO ;TS TECNOSPAMEC S R L (IT)) 26 September 2002 (2002-09-26) page 2, line 5 - line 20 page 1, line 15 - line 19	17,18
X	----- US 4 443 129 A (HERVE GUY ET AL) 17 April 1984 (1984-04-17) column 14, line 49 -column 6, line 6; figures 1-8	2
A	-----	1
A	----- US 4 444 528 A (RAIMONDI ADALBERTO ET AL) 24 April 1984 (1984-04-24) column 7, line 4 -column 11, line 28; figures 1-7	1,2
	-----	

## INTERNATIONAL SEARCH REPORT

 International Application No  
 PCT/EP2004/001094

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5044827	A	03-09-1991	NONE	
US 5437517	A	01-08-1995	IT 1272119 B GB 2276431 A ,B NO 941005 A	11-06-1997 28-09-1994 23-09-1994
GB 2286648	A	23-08-1995	AU 687516 B2 AU 1712295 A AU 695730 B2 AU 4828097 A AU 713723 B2 AU 4828197 A BR 9506811 A WO 9522484 A1 GB 2301647 A ,B GB 2310267 A ,B GB 2310268 A ,B GB 2310269 A ,B NO 963426 A US 6056478 A	26-02-1998 04-09-1995 20-08-1998 12-02-1998 09-12-1999 12-02-1998 09-09-1997 24-08-1995 11-12-1996 20-08-1997 20-08-1997 20-08-1997 16-10-1996 02-05-2000
WO 02075059	A	26-09-2002	IT GE20010026 A1 BR 0208194 A WO 02075059 A1 EP 1373645 A1 NO 20034218 A US 2004069103 A1	20-09-2002 23-03-2004 26-09-2002 02-01-2004 22-09-2003 15-04-2004
US 4443129	A	17-04-1984	FR 2488973 A1 AU 541354 B2 AU 7447081 A BR 8105354 A DE 3133244 A1 ES 8302252 A1 GB 2082721 A ,B IT 1139410 B JP 57073292 A NL 8103904 A NO 812837 A	26-02-1982 03-01-1985 25-02-1982 11-05-1982 27-05-1982 01-04-1983 10-03-1982 24-09-1986 07-05-1982 16-03-1982 23-02-1982
US 4444528	A	24-04-1984	IT 1055932 B AR 222777 A1 AU 508041 B2 AU 2256677 A BE 851851 A1 BR 7701194 A CA 1057516 A1 DE 2708297 A1 DE 7614239 U1 DK 79477 A ,B, DK 486680 A ,B, EG 15161 A ES 220050 Y ES 456563 A1 FI 770556 A ,B, FI 67520 B FR 2342441 A1 GB 1546335 A	11-01-1982 30-06-1981 06-03-1980 31-08-1978 25-08-1977 18-10-1977 03-07-1979 01-09-1977 04-11-1976 26-08-1977 14-11-1980 31-12-1985 16-02-1977 16-02-1978 26-08-1977 31-12-1984 23-09-1977 23-05-1979

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP2004/001094

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4444528	A	IE 44496 B1	16-12-1981
		JP 1348279 C	13-11-1986
		JP 52104315 A	01-09-1977
		JP 61014396 B	18-04-1986
		NL 7701958 A ,B,	29-08-1977
		NO 770607 A ,B,	26-08-1977
		NZ 183407 A	08-05-1980
		OA 5581 A	30-04-1981
		PT 66232 A ,B	01-03-1977
		SE 433116 B	07-05-1984
		SE 7702127 A	26-08-1977

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